Electronic Version
Stylesheet Version v1.1.1

Description

CLIMBING STRUCTURE WITH SECURE CLIMBING HOLD

BACKGROUND OF INVENTION

[0001] The popularity of rock climbing has created a market for artificial climbing walls. Many artificial climbing walls include surfaces that have irregular shapes to simulate natural rock formations. These artificial climbing walls can also include climbing holds that a climber can grab with his hands or stand on with his feet. The climbing holds allow the climber to ascend, descend, or traverse the climbing wall. The climbing holds are generally detachable and can be re-positioned in different locations on the climbing surface to customize the climbing surface for different climbing experiences. The climbing holds are available in a variety of shapes and sizes to further modify the climbing surface.

[0002] A metal bolt is generally used to mount the climbing hold to the climbing surface. The metal bolt passes through a

shouldered-hole in the climbing hold and is threaded into a threaded insert that is secured to the climbing wall. The combination of the metal bolt and the threaded insert must be strong enough to support the weight of the climber. Mounting a climbing hold with more than one metal bolt can be difficult because different climbing holds have irregular sizes and shapes.

Brief Description of Drawings

[0003] This invention is described with particularity in the detailed description and the claims. The above and further advantages of this invention may be better understood by referring to the following description in conjunction with the accompanying drawings, in which like numerals indicate like structural elements and features in various figures. The drawings are not necessarily to scale, emphasis instead being placed upon illustrating the principles of the invention.

[0004] FIG. 1 illustrates a front view of a climbing structure having a climbing surface and multiple climbing holds.

[0005] FIG. 2 illustrates a cross-sectional view of the climbing structure of FIG. 1 including a climbing hold that is mounted to a climbing surface of the climbing structure with a bolt.

[0006] FIG. 3 illustrates a cross-sectional view of a climbing structure including a climbing hold that is mounted to a climbing surface of the climbing structure with a first bolt and a second bolt.

[0007] FIG. 4 illustrates a cross-sectional view of a climbing structure including a climbing hold that is mounted to a climbing surface of the climbing structure with a threaded member according to the invention.

[0008] FIG. 5A illustrates a cross-sectional view of another climbing structure including a climbing hold that is mounted to a climbing surface of the climbing structure with a threaded member according to the invention.

[0009] FIG. 5B illustrates the rear surface of the climbing hold described in connection with FIG. 5A according to the invention.

[0010] FIG. 6A illustrates a cross-sectional view of yet another climbing structure including a climbing hold that is mounted to a climbing surface of the climbing structure with a threaded member according to the invention.

[0011] FIG. 6B and FIG. 6C illustrate rear surfaces of climbing holds described in connection with FIG. 6A according to the invention.

[0012] FIG. 7A illustrates a cross-sectional view of another

climbing structure including a climbing hold that is mounted to a climbing surface of the climbing structure with a threaded member according to the invention.

[0013] FIG. 7B illustrates a rear surface of the climbing hold described in connection with FIG. 7A according to the invention.

Detailed Description

[0014] FIG. 1 illustrates a front view of a climbing structure 100 having a climbing surface 102 and multiple climbing holds 104. The multiple climbing holds 104 have various shapes and sizes and are secured to the climbing surface 102 at different locations in order to customize the climbing route and the climbing difficulty. Each of the multiple climbing holds 104 is typically secured to the climbing surface 102 with a single fastener or bolt 106.

[0015] FIG. 2 illustrates a cross-sectional view of the climbing structure 100 of FIG. 1 including a climbing hold 104 that is mounted to the climbing surface 102 of the climbing structure 100 with a bolt 106. The climbing structure 100 includes a threaded insert 108 that receives the bolt 106. The threaded insert 108 can be attached to the climbing structure 100 by various methods known in the art. Alternatively, threads can be formed directly in the climbing

surface 102 of the climbing structure 100.

[0016] The climbing hold 104 includes a shouldered through-hole 110 that is sized to receive the bolt 106. The shouldered through-hole 110 has a depth that prevents the head 112 of the bolt 106 from protruding past an outer surface 114 of the climbing hold 104 to prohibit the head 112 of the bolt 106 from injuring a climber.

[0017] The shouldered through-hole 110 has a diameter that allows a tool, such as a socket, to grip the head 112 of the bolt 106. The tool is used to tighten the bolt 106 to secure the climbing hold 104 to the climbing surface 102 of the climbing structure 100. The climbing hold 104 can rotate about an axis 116 of the bolt 106 when a rotational force is applied to the climbing hold 104 even after the bolt 106 is sufficiently tightened. This can occur particularly when the rotational force is applied in a counter-clockwise direction and the bolt 106 includes right-handed threads. Also, the bolt 106 can become loose from repeated loading and stress on the climbing structure 100. Loose bolts are dangerous because a climber can lose his grip on the climbing hold 104 if the bolt 106 loosens and the climbing hold 104 inadvertently rotates. Also, the climbing hold 104 can mar or otherwise damage

the surface 102 of the climbing structure 100 during the unintentional rotation.

[0018] FIG. 3 illustrates a cross-sectional view of a climbing structure 100' including a climbing hold 120 that is mounted to a climbing surface 102' of the climbing structure 100' with a first bolt 106 and a second bolt 122. The climbing hold 120 includes a second shouldered through-hole 124. The first bolt 106 and the second bolt 122 prevent the climbing hold 120 from unintentionally rotating by securing the climbing hold 120 to the climbing surface 102' at two locations. The climbing structure 100' includes a second threaded insert 126 that receives the second bolt 122.

[0019] Climbing holds are available in many shapes and sizes. Many climbing holds are too small to accept more than one shouldered through-hole. Also, mounting a climbing hold 104 (FIG. 2) using one bolt or fastener is more desirable than mounting a climbing hold 120 (FIG. 3) using multiple bolts. A climbing hold 104 mounted with a single bolt 106 can be rotated about an axis 116 (FIG. 2) of the bolt 106 and can be secured in many different angular positions relative to the climbing surface 102 of the climbing structure 100. Mounting the climbing hold 120

using multiple bolts requires a pattern of matching threaded holes or threaded inserts formed in the climbing surface 102' of the climbing structure 100' in order to change the orientation of the climbing hold 120 relative to the climbing surface 102'.

[0020] FIG. 4 illustrates a cross-sectional view of a climbing structure 150 including a climbing hold 152 that is mounted to a climbing surface 154 of the climbing structure 150 with a threaded member 156 according to the invention. The climbing hold 152 can be a hand or a foot hold. The climbing hold 152 can include at least one rock-like protrusion 157. The climbing hold 152 can also be adapted to include hooks or carabineers for supporting a climbing rope or a bungee cord. The threaded member 156 can be a socket-head cap screw, a hexagonal headed bolt, a cylindrical headed bolt, a conical headed bolt, or a threaded rod. The threaded rod can include a nut on one or both ends.

[0021] The climbing structure 150 also includes an opening 158 in the climbing surface 154. The opening 158 can include a threaded insert 160. The threaded insert 160 mates with the threaded member 156. In one embodiment, the opening 158 is a threaded opening in the climbing surface 154

of the climbing structure 150 instead of the threaded insert 160. The opening 158 can also be through-hole. In this embodiment, a nut 161 is positioned on the back surface 162 of the climbing structure 150 to receive the threaded member 156 in order to secure the climbing hold 152 to the climbing surface 154.

[0022] The climbing hold 152 includes a shouldered through-hole or opening 164 in the climbing hold 152. The opening 164 is sized to receive the threaded member 156. The head 166 of the threaded member 156 is seated against the shouldered opening 164 to secure the climbing hold 152 to the climbing surface 154 of the climbing structure 150. The shouldered opening 164 has a depth that prevents the head 166 of the threaded member 156 from protruding beyond an outer surface 168 of the climbing hold 152. A plug 170 can be inserted into the opening 164 in the climbing hold 152 to conceal the head 166 of the threaded member 156.

[0023] The climbing hold 152 also includes a pocket or recess 172. The recess 172 is offset a distance from the opening 164 in the climbing hold 152 and is shaped to receive a first portion 174 of an insert 176. In one embodiment, the first portion 174 of the insert 176 is mushroom-shaped.

The first portion 174 of the insert 176 can also be cylindrical in shape. The climbing surface 154 of the climbing structure 150 includes a first recess 178 that is shaped to receive a second portion 180 of the insert 176. In one embodiment, the second portion 180 of the insert 176 is cylindrical in shape. The first recess 178 is offset a distance (d) relative to the opening 158 in the climbing surface 154.

[0024] The insert 176 can be in the shape of a bolt 181. A first portion 174' of the insert 176 is the head of the bolt 181 and a second portion 180' of the insert 176 is the threaded shaft of the bolt 181. The head of the bolt 181 can be cylindrical in shape. The second portion 180' of the insert 176 can be threaded into a recess 178' in the climbing surface 154.

[0025] The climbing surface 154 of the climbing structure 150 also includes a second recess 182 that is located at a different position in the climbing surface 154 than the first recess 178. The second recess 182 is offset the same distance (d) relative to the opening 158 in the climbing surface 154 as the first recess 178. The second recess 182 is the same size and shape as the first recess 178. The climbing surface 154 of the climbing structure 150 can

include other recesses (not shown) that are the same size and shape as the first 178 and the second recesses 182 but are located at different radial positions relative to the opening 158. Each of the other recesses is offset the same distance (d) from the opening 158 in the climbing surface 154 as the first 178 and the second recesses 182.

[0026] In one embodiment, the second portion 180 of the insert 176 is removed from the first recess 178 and inserted into the second recess 182 in the climbing surface 154. The climbing hold 152 can then be re-oriented in a different position relative to the climbing surface 154 so that the recess 172 in the climbing hold 152 engages the first portion 174 of the re-positioned insert 176.

[0027] The second portion 180 of the insert 176 can include a threaded shaft that mates with threads in the first recess 178 so that the second portion 180 of the insert 176 is secured in the first recess 178. Alternatively, a nut 184 can be positioned on the back surface 162 of the climbing structure 150 to receive the threads on the second portion 180 of the insert 176. The second portion 180 of the insert 176 can also be glued or otherwise permanently mounted in the first recess 178.

[0028] The climbing hold 152 is secured to the climbing surface

154 by aligning the first portion 174 of the insert 176 with the recess 172 in the climbing hold 152. The second portion 180 of the insert 176 is aligned with the first recess 178 in the climbing surface 154. The threaded member 156 is then inserted through the opening 164 in the climbing hold 152 and into the opening 158 in the climbing surface 154 to secure the climbing hold 152 to the climbing surface 154. The threaded member 156 secures the climbing hold 152 to the climbing surface 154 and causes the first 174 and the second portions 180 of the insert 176 to engage the recess 172 in the climbing hold 152 and the first recess 178 in the climbing surface 154.

[0029] Alternatively, the threaded member 156 can be inserted into the opening 158 from the back surface 162 of the climbing structure 150. In this embodiment, the climbing hold 152 includes a threaded insert (not shown) that receives the threaded member 156. The threaded member 156 can be tightened from the back surface 162 of the climbing structure 150 to secure the climbing hold 152 to the climbing surface 154 of the climbing structure 150.

[0030] FIG. 5A illustrates a cross-sectional view of another climbing structure 200 including a climbing hold 202 that is mounted to a climbing surface 204 of the climbing

structure 200 with a threaded member 156 according to the invention. The climbing structure 200 includes an opening 206 in the climbing surface 204. The opening 206 can include a threaded insert 208. The threaded insert 208 mates with the threaded member 156. The climbing hold 202 includes a shouldered opening 210 in the climbing hold 202. The opening 210 in the climbing hold 202 is sized to receive the threaded member 156. The head 166 of the threaded member 156 is seated against the shouldered opening 210 to secure the climbing hold 202 to the climbing surface 204 of the climbing structure 200.

[0031] The climbing hold 202 also includes at least one recess 212 located in the rear surface 214 of the climbing hold 202. The recess 212 can be a slot in the rear surface 214 of the climbing hold 202. The recess 212 can extend in a radial direction from the opening 210 in the climbing hold 202. The recess 212 is offset a distance from the opening 210 and is shaped to receive a first portion 216 of an insert 218 that is substantially formed in the shape of a staple. The staple-shaped insert 218 includes first 220 and second leg portions 222 that are substantially perpendicular to the first portion 216 of the insert 218.

[0032] The climbing surface 204 of the climbing structure 200 includes a first recess 224 that is shaped to receive the first leg portion 220 of the insert 218. The climbing surface 204 of the climbing structure 200 also includes a second recess 226 that is shaped to receive the second leg portion 222 of the insert 218. The first recess 224 is offset a distance from the opening 206. The second recess 226 is offset a distance from the first recess 224 corresponding to a length of the first portion 216 of the insert 218.

[0033] The climbing surface 204 of the climbing structure 200 also includes third 228 and fourth recesses 230 that are located at different radial positions than the first 224 and the second recesses 226. The climbing surface 204 of the climbing structure 200 can include other recesses (not shown) that are the same size and shape as the first 224 and the second recesses 226 but are located at different radial positions relative to the opening 206 in the climbing surface 204.

[0034] In one embodiment, an insert 234 that is formed in the shape of a pin can be used with the climbing structure 200 of FIG. 5A. A first portion 236 of the insert 234 can engage the slot-like recess 212 in the climbing hold 202.

A second portion 238 of the insert 234 can engage a recess 240 in the climbing surface 204. The second portion 238 of the insert 234 can also engage the other recesses 224, 226, 228, 230 in the climbing surface 204 when the climbing hold 202 is suitably positioned.

[0035] The climbing hold 202 is secured to the climbing surface 204 by aligning the first 220 and the second leg portions 222 of the insert 218 with the first 224 and the second recesses 226 in the climbing surface 204. The first 220 and the second leg portions 222 of the insert 218 can be inserted into the first 224 and the second recesses 226 in the climbing surface 204. The first portion 216 of the insert 218 is aligned with the recess 212 in the climbing hold 202. The threaded member 156 is then inserted through the opening 210 in the climbing hold 202 and into the opening 206 in the climbing surface 204 to secure the climbing hold 202 to the climbing surface 204. The threaded member 156 secures the climbing hold 202 to the climbing surface 204 and causes the first portion 216 of the insert 218 to engage the recess 212 in the climbing hold 202 and the first 220 and the second leg portions 222 of the insert 218 to engage the first 224 and the second recesses 226 in the climbing surface 204.

[0036] The staple-shaped insert 218 can be fabricated from a metal rod or any other suitable material. The slot-shaped recess 212 in the rear surface 214 of the climbing hold 202 can be formed by routing techniques or molded into the climbing hold 202 during manufacturing. Other known techniques can be utilized to form the slot-shaped recesses 212 in the rear surface 214 of the climbing hold 202.

[0037] FIG. 5B illustrates the rear surface 214 of the climbing hold 202 described in connection with FIG. 5A according to the invention. The climbing hold 202 defines an opening 210 that is used to mount the climbing hold 202 to the climbing surface 204 (FIG. 5A). The opening 210 can be a shouldered opening as previously described.

[0038] The climbing hold 202 includes one or more recesses 212 that are formed in the rear surface 214 of the climbing hold 202. The recesses 212 are slot-like in shape and extend radially outward from the opening 210 in the climbing hold 202. The recesses 212 are sized to receive the first portion 216 of the insert 218 (FIG. 5A). The locations of the recesses 212 allow the climbing hold 202 to engage the first portion 216 of the insert 218 while in various orientations relative to the climbing surface 204. The

recess 212 in the climbing hold 202 that is aligned with the first portion 216 of the insert 218 prevents the climbing hold 202 from inadvertently rotating when it is mounted to the climbing surface 204.

[0039] The recesses 212 can be formed in the rear surface 214 of the climbing hold by various techniques. For example, the recesses 212 can be formed in the rear surface 214 by routing or cutting material from the rear surface 214. This technique can be used with pre-fabricated climbing holds that are manufactured by a variety of climbing hold manufacturers. Alternatively, the one or more recesses 212 can be formed in the rear surface 214 during the process of manufacturing the climbing hold 202. Many fabrication techniques for producing artificial climbing holds are known in the art.

[0040] FIG. 6A illustrates a cross-sectional view of yet another climbing structure 250 including a climbing hold 252 that is mounted to a climbing surface 254 of the climbing structure 250 with a threaded member 156 according to the invention. The climbing structure 250 includes an opening 256 in the climbing surface 254. The opening 256 can include a threaded insert 260.

[0041] The climbing hold 252 includes an opening 264 in the

climbing hold 252. The opening 264 is sized to receive the threaded member 156. The climbing hold 252 also includes a recess 272. The recess 272 is offset a distance from the opening 264 in the climbing hold 252 and is shaped to receive a first portion 274 of an insert 276. The first portion 274 of the insert 276 can be cylindrical in shape. The insert 276 can be a pin, a sphere, a capsule, or a block. Alternatively, the insert can be a circular insert, a spherical insert, a cylindrical insert, a rectangular insert, a triangular insert, a trapezoidal insert, a hexagonal insert, an octagonal insert, or an ellipsoidal insert.

[0042] The climbing surface 254 of the climbing structure 250 includes a recess 280 that is shaped to receive a second portion 282 of the insert 276. The recess 280 is offset a distance relative to the opening 256 in the climbing surface 254. The climbing surface 254 of the climbing structure 250 can also include other recesses 284, 286, 288, 290, and 292 that are located at various different positions in the climbing structure 250. Each of the other recesses 284, 286, 288, 290, and 292 is sized to receive the second portion 282 of the insert 276.

[0043] The recesses 280, 284, 286, 288, 290, and 292 can be positioned at different distances from the opening 256 in

the climbing structure 250. This allows climbing holds having different sizes and shapes to be used with the climbing structure 250. For example, a recess in a small climbing hold might align with the recess 288 in the climbing surface 254, whereas a recess in a large climbing hold might align with the recess 286 in the climbing surface 254. The rotational force or torque exerted on the climbing hold generally increases as the size of the climbing hold increases. In one embodiment, the outermost recess that is reachable in the climbing surface 254 for a particular climbing hold is used to minimize the rotational force or torque.

[0044] The climbing hold 252 is secured to the climbing surface 254 by aligning the first portion 274 of the insert 276 with the recess 272 in the climbing hold 252. The second portion 282 of the insert 276 is aligned with the recess 280 in the climbing surface 254. The second portion 282 of the insert 276 can then be inserted into the recess 280 in the climbing surface 254. The opening 264 in the climbing hold 252 is aligned with the opening 256 in the climbing surface 254.

[0045] The threaded member 156 is then inserted through the opening 264 in the climbing hold 252 and into the open-

ing 256 in the climbing surface 254 to secure the climbing hold 252 to the climbing surface 254. The threaded member 156 secures the climbing hold 252 to the climbing surface 254 and causes the first 274 and the second portions 282 of the insert 276 to engage the recess 272 in the climbing hold 252 and the recess 280 in the climbing surface 254. This secures the climbing hold 252 to the climbing surface 254 and prevents the climbing hold 252 from inadvertently rotating.

[0046] Alternatively, the second portion 282 of the insert 276 can be permanently mounted into the recess 280 in the climbing surface 254. For example, the second portion 282 of the insert 276 can be glued into the recess 280, threaded into the recess 280, press-fit into the recess, or welded into the recess.

[0047] In one embodiment, an insert 294 is a molded protrusion 296 that is positioned on the climbing surface 254. At least a portion of the molded protrusion 296 is sized to engage the recess 272 in the climbing hold 252. The molded protrusion 296 can be fabricated during the process of manufacturing the climbing surface 254. The molded protrusion 296 can also be attached to the climbing surface 254. The climbing surface 254 can include a

plurality of molded protrusions 296 that are positioned in different locations on the climbing surface 254. Each of the molded protrusions 296 are sized to engage the recess 272 in the climbing hold 252.

[0048] The climbing hold 252 is secured to the climbing surface 254 by aligning the opening 264 in the climbing hold 252 to the opening 256 in the climbing surface 254. The molded protrusion 296 on the climbing surface 254 is aligned with the recess 272 in the climbing hold 252. The threaded member 156 is then inserted through the opening 264 in the climbing hold 252 and into the opening 256 in the climbing surface 254 to secure the climbing hold 252 to the climbing surface 254 and to cause the molded protrusion 296 to engage the recess 272 in the climbing hold 252. Securing the climbing hold 252 to the climbing surface 254 substantially prevents the climbing hold 252 from rotating relative to the climbing surface 254.

[0049] FIG. 6B and FIG. 6C illustrate rear surfaces 295, 295' of climbing holds 252, 252' described in connection with FIG. 6A according to the invention. The climbing holds 252, 252' both define an opening 264 that is used to mount the climbing holds 252, 252' to the climbing sur-

face 254 (FIG. 6A). The opening 264 can be a shouldered opening as previously described. The climbing hold 252 of FIG. 6B is larger than the climbing hold 252' of FIG. 6C.

[0050] The climbing holds 252, 252' each include a ring of recesses 272, 272' that are formed in the rear surface 295, 295' of each of the climbing holds 252, 252'. In some embodiments, the recesses 272, 272' in the climbing holds 252, 252' are formed into other hole patterns (not shown) instead of rings.

[0051] The ring of recesses 272 in the climbing hold 252 has a different diameter than the ring of recesses 272' in the climbing hold 252'. Engaging an insert 276 (FIG. 6A) in one of the recesses 272 in the large diameter ring of recesses 272 in the climbing hold 252 can prevent a large rotational force applied to the edge 297 of the climbing hold 252 from rotating the climbing hold 252. Engaging an insert 276 in one of the recesses 272' in the smaller climbing hold 252' can prevent a smaller rotational force applied to the edge 297' of the climbing hold 252' from rotating the climbing hold 252'. The rotational force applied to the edge 297 of the climbing hold 252 is larger than a similar rotational force applied to the edge 297' of the climbing hold 252' because of the difference in the

length of the moment arms between the opening 264 and the edges 297, 297' of the two climbing holds 252, 252'. The diameter of the ring of recesses 272 in the larger climbing hold 252 is large enough to prevent damage to the climbing hold 252 and the climbing surface 254 (FIG. 6A) when a large rotational force is applied to the edge 297 of the climbing hold 252.

[0052] The ring of recesses 272, 272' in the climbing holds 252, 252' allows the climbing holds 252, 252' to be oriented in different positions relative to the climbing surface 254 (FIG. 6A). In the example shown in FIG. 6B, the climbing hold 252 can be oriented in at least nineteen different positions corresponding to the nineteen recesses 272 in the rear surface 295 of the climbing hold 252. The climbing hold 252 can be oriented in additional positions depending on the position and number of additional recesses in the climbing surface 254 (FIG. 6A). In the example shown in FIG. 6C, the climbing hold 252' can be oriented in at least eleven different positions corresponding to the eleven recesses 272' in the rear surface 295' of the climbing hold 252'. The climbing hold 252' can be oriented in additional positions depending on the position and number of additional recesses in the climbing surface 254

(FIG. 6A).

[0053] FIG. 7A illustrates a cross-sectional view of another climbing structure 300 including a climbing hold 302 that is mounted to a climbing surface 304 of the climbing structure 300 with a threaded member 156 according to the invention. The climbing structure 300 includes an opening 306 in the climbing surface 304.

[0054] The climbing hold 302 defines an opening 308 for mounting the climbing hold 302 to the climbing surface 304. The opening 308 receives the threaded member 156. The climbing hold 302 also includes recesses 310, 312, 314, 316, and 318. The recesses 310, 312, 314, 316, and 318 are each offset a distance from the opening 308 in the climbing hold 302 and are shaped to receive a first portion 320 of an insert 322.

[0055] The climbing surface 304 of the climbing structure 300 includes a recess 324 that receives a second portion 326 of the insert 322. The recess 324 is offset a distance relative to the opening 306 in the climbing surface 304. The climbing surface 304 of the climbing structure 300 can also include another recess 328 that is located at a different position in the climbing surface 304. The other recess 328 is sized to receive the second portion 326 of the in-

sert 322.

[0056] The climbing hold 302 is secured to the climbing surface 304 by aligning the first portion 320 of the insert 322 with the recess 314 in the climbing hold 302. The first portion 320 of the insert 322 can then be inserted into the recess 314 in the climbing hold 302. The second portion 326 of the insert 322 is aligned with the recess 324 in the climbing surface 304. The opening 308 in the climbing hold 302 is aligned with the opening 306 in the climbing surface 304.

[0057] The threaded member 156 is then inserted through the opening 308 in the climbing hold 302 and into the opening 306 in the climbing surface 304 to secure the climbing hold 302 to the climbing surface 306. The threaded member 156 secures the climbing hold 302 to the climbing surface 304 and causes the first 320 and the second portions 326 of the insert 322 to engage the recess 314 in the climbing hold 302 and the recess 324 in the climbing surface 304. This secures the climbing hold 302 to the climbing surface 304 and prevents the climbing hold 302 from rotating relative to the climbing surface 304.

[0058] Alternatively, the first portion 320 of the insert 322 can be permanently mounted into the recess 314 in the climbing

hold 302. However, permanent mounting can limit flexibility in the positioning of the climbing hold 302, since the insert 322 can not be easily removed and there may be a limited number of corresponding recesses in the climbing surface 304 to which the second portion 326 of the insert 322 can be aligned.

[0059] FIG. 7B illustrates a rear surface 330 of the climbing hold 302 described in connection with FIG. 7A according to the invention. The rear surface 330 of the climbing hold 302 includes the recesses 310, 312, 314, 316, and 318. Each recess 310, 312, 314, 316, 318 can be positioned in rings of recesses 332, 334, and 336 that are located at different distances from the opening 308 in the climbing hold 302. For example, the recesses 310, 312 can be located in a ring of recesses 332 that is positioned a predetermined radial distance from the opening 308. The number of recesses and the position of the recesses on the rear surface 330 of the climbing hold 302 can be changed to increase the mounting flexibility of the climbing hold 302.

[0060] The climbing holds can be fabricated by a variety of climbing hold manufacturers and can be modified to include one or more recesses for receiving an insert using the techniques described herein. This allows existing

climbing holds to be modified to include one or more recesses according to the invention. An existing climbing hold can still be utilized without the insert even after the rear surface has been modified. However, utilizing the existing climbing hold without the insert will not prevent the climbing hold from rotating when sufficient torque is applied to it.

[0061] The rings of recesses 332, 334, 336 can be formed in the rear surface 330 of the climbing hold 302 by using a suitable jig or a vise (not shown) and a drill press (not shown). The climbing hold 302 can be mounted in the jig such that the rear surface 330 is facing a suitably-sized drill bit that is loaded into the drill press. The drill press is then preset to drill a recess having the appropriate depth into the rear surface 330 of the climbing hold 302. The jig is then rotated by a desired angle and another recess is drilled into the rear surface 330. This operation continues until a desired number of recesses are formed in the rear surface 330 of the climbing hold 302. The jig can then be translated relative to the drill press so that rings of recesses having differing diameters can be formed in the rear surface 330 of the climbing hold 302. Other known techniques can be utilized to form recesses in the rear

surface 330 of the climbing hold 302.

EQUIVALENTS

[0062] While the invention has been particularly shown and described with reference to specific preferred embodiments, it should be understood by those skilled in the art that various changes in form and detail may be made therein without departing from the spirit and scope of the invention as defined herein.

[0063] What is claimed is: